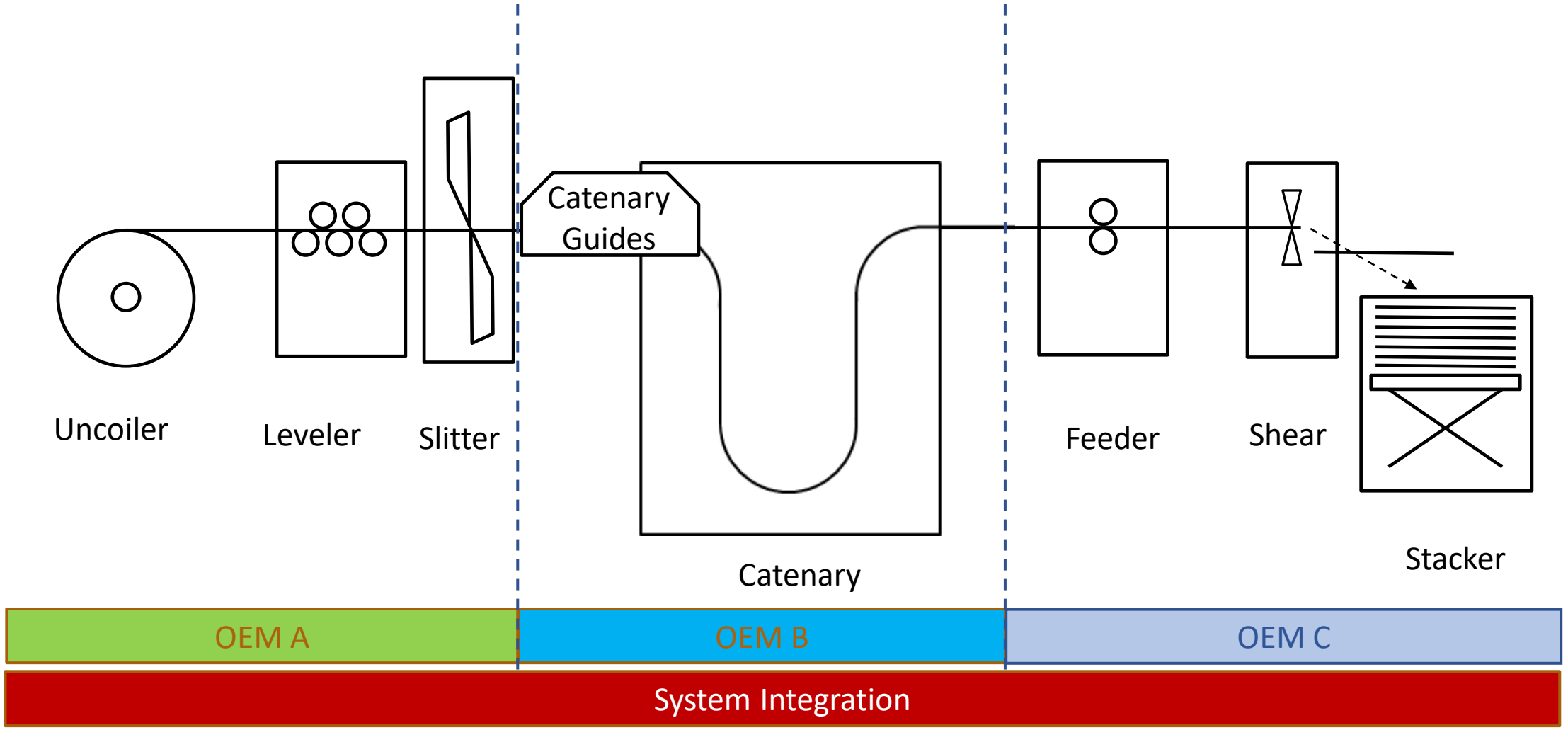
System Sizing Discussion

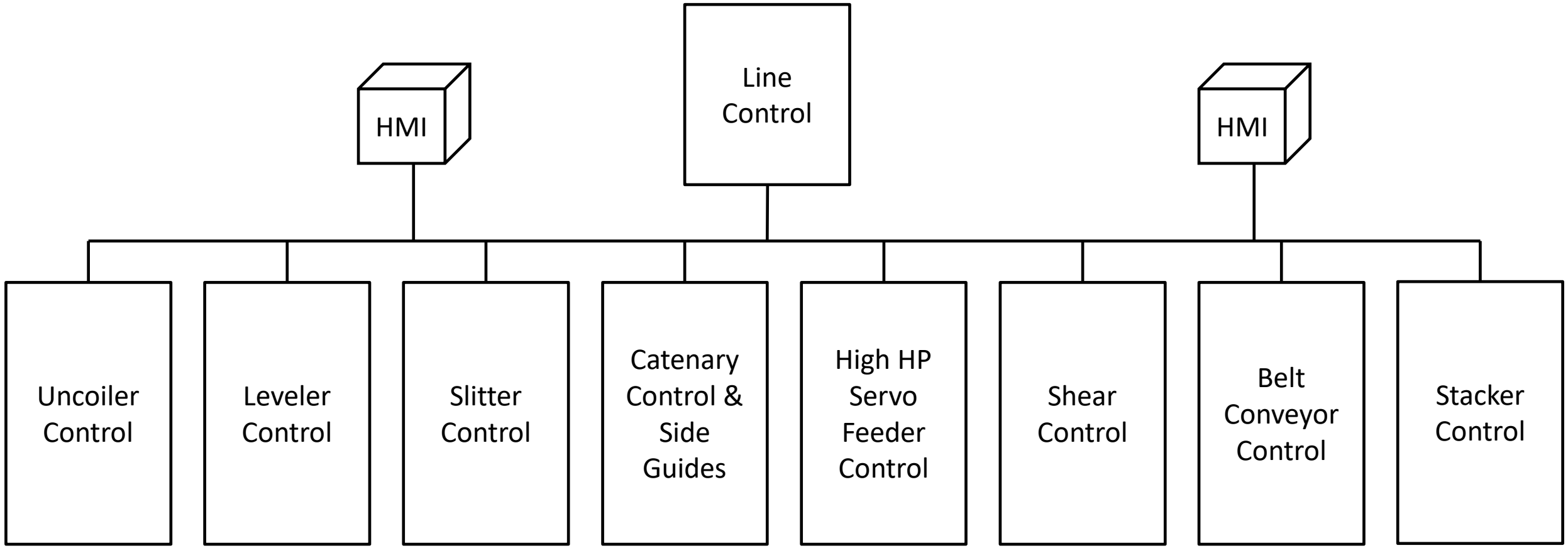
Steve Zuponcic IEC/IEEE 60802 September 2021

	Network Size		
	Small	Medium	Large
Network Diameter			
Talkers	64	128	512
Listeners	64	128	512
Parameters			
Link speed	Application Dependent	Application Dependent	Application Dependent
Streams	256	1024	9K
FDB entries (streams)	128	256	4096
FDB entries (non-streams)	1024	1024	2048
Gate control list entries	16	16	256
Forwarding Resources			
- egress queuing at 1 Gb/s	200 µs of frame data	200 µs of frame data	200 µs of frame data
- egress queuing at 100 Mb/s	500 µs of frame data	500 µs of frame data	500 µs of frame data

Blanking Line Application



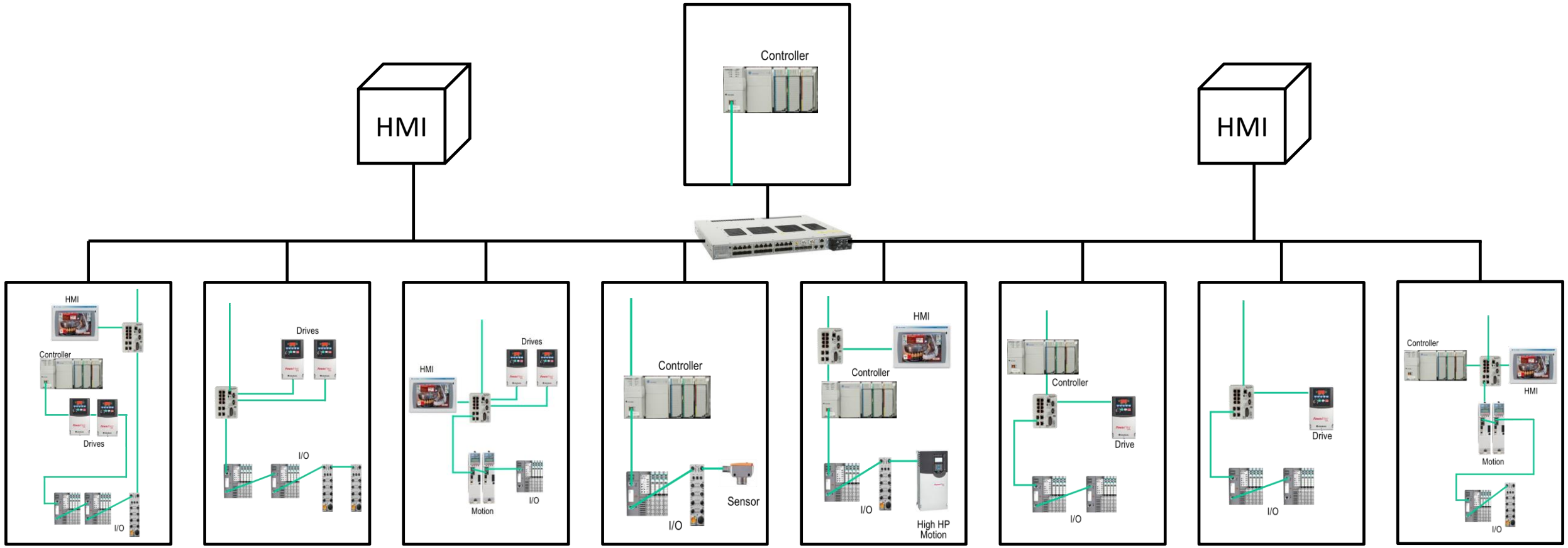
System Sizing Considerations



OEM A | OEM B | OEM C

System Integration

System Sizing Considerations



OEM A | OEM B | OEM C

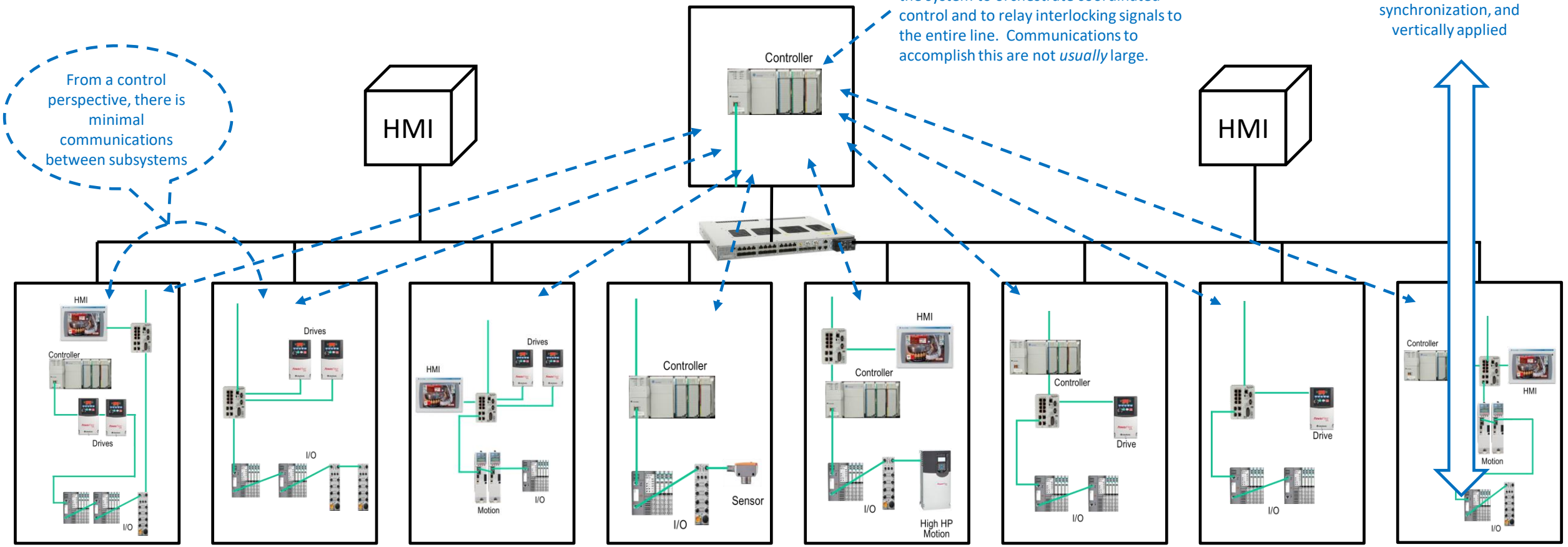
System Integration

System Sizing Considerations

From a control perspective, there is minimal communications between subsystems

A line control function exists somewhere in the system to orchestrate coordinated control and to relay interlocking signals to the entire line. Communications to accomplish this are not *usually* large.

Network diameter is largely bounded by time synchronization, and vertically applied



OEM A | OEM B | OEM C

System Integration

System Sizing Considerations

- Number of Streams in a subsystem may be denser compared to inter-subsystem communications.
  - However, most subsystems are still bound to a manageable number of total streams
  - From a control perspective, there is usually minimal communications between two subsystems
  - A line control function exists somewhere in the system to orchestrate coordinated control and to relay interlocking signals to the entire line. Communications to accomplish this are not usually large.
- Ultimately, Network Diameter is a function of Time Synchronization. The total number of hops is limited by the residence time across each node. Accuracy specifications are defined at 1 usec across 64 nodes.
  - Time synchronization tends to be “watershed;” i.e, top down, and not across machine.
    - Therefore, network diameter may be bound more vertically than horizontally across a machine , a manufacturing plant, or an enterprise.
    - Non-synchronized systems are not limited to a given number and may be expanded beyond those specified for 64 nodes at 1 usecs.
  - From a control perspective:
    - Nodes are synchronized top, down, or vertically
    - Control communicates horizontally

Hierarchical Time